

DURABILITY AND FIXINGS

Section 4 of the recently released NZS 3604:2011 has a number of changes that designers and builders need to be aware of when specifying and procuring fixings for different locations.

By Trevor Pringle, ANZIA, BRANZ Principal Writer

NZS 3604:2011 *Timber-framed buildings* uses a number of terms to identify where a fixing or metal component may be located and the risk of deterioration it may be subject to (Figures 4.3a and 4.3b):

- 'Exposed' where the component is fully exposed to everything the weather and the environment can throw at it.
- 'Sheltered' where the component is not exposed to direct rain wetting but may be affected by airborne contaminants such as salts. Examples are the area under an eave, an open subfloor, under an open cantilevered floor or a deck with a sheet material surface.
- 'Closed' where the component is fully enclosed, dry and protected from the direct effect of weather and contaminants. A closed space is within a roof or wall-framing cavity with cladding on the outside and internal linings.

Selecting the right fixing

To meet the durability requirements of the Building Code, use NZS 3604:2011 Table 4.1 (fixings and fastenings excluding nails and screws) and Table 4.3 (nails and screws for framing and cladding) to select the appropriate

metal fixing for the location within the building and the exposure or corrosion zone the building is located in. Exposure zones are based on the risk of wind-blown sea-spray salts coming into contact with the building elements and evidence of micro-climate effects, for example from industrial contaminants, geothermal hotspots etc.

Follow the example

As with many of the tables in NZS 3604:2011, it is important to read the table notes in conjunction with Table 4.1 itself. The following examples work through some minimum requirements.

STRUCTURAL FIXING IN ZONES B AND C

First work out if the location is sheltered or exposed – see definitions in Table 4.1 note 4 and Figures 4.3a and 4.3b. Also see the ventilation requirements in Table 4.1 for choosing subfloor connectors that attach to treated piles (H5) or connections that are within 600 mm of the ground.

All connections to treated timber piles within 600 mm of the ground must be 304 stainless steel or 316 if appearance is important.

For subfloor connections to treated piles that are above 600 mm from the ground and all other subfloor connections, the ventilation rate

determines the minimum fixing requirements:

- Subfloors vented $7,000 \text{ mm}^2/\text{m}^2$ or less are considered sheltered (see Figure 1) and require galvanised fixings as per Table 4.2.
- Subfloors vented more than $7,000 \text{ mm}^2/\text{m}^2$ (see Figure 2) are deemed to be exposed and require 304 stainless steel fixings.

For all other structural fixings in zones B and C, except fabricated brackets, the choice depends on the location. If exposed, 304 stainless steel is required, but if sheltered, galvanised steel is permitted (see Table 4.2 for requirements).

Fabricated brackets must be a minimum of 5 mm thick so they can be galvanised to the coating weights in Table 4.2 – $390 \text{ g}/\text{m}^2$ for sheltered locations and $600 \text{ g}/\text{m}^2$ for exposed.

STRUCTURAL FIXING IN ZONE D

All structural fixings, whether sheltered or exposed, are required to be 304 stainless steel. 316 is recommended where appearance is important.

NAIL PLATES

In all zones, nail plates within closed environments and roof spaces must be continuously coated galvanised steel. Note 2 to this part of Table 4.1 requires galvanising in accordance with Table 4.2, which requires that the nail plates be made from Z275 pre-galvanised sheet. ■

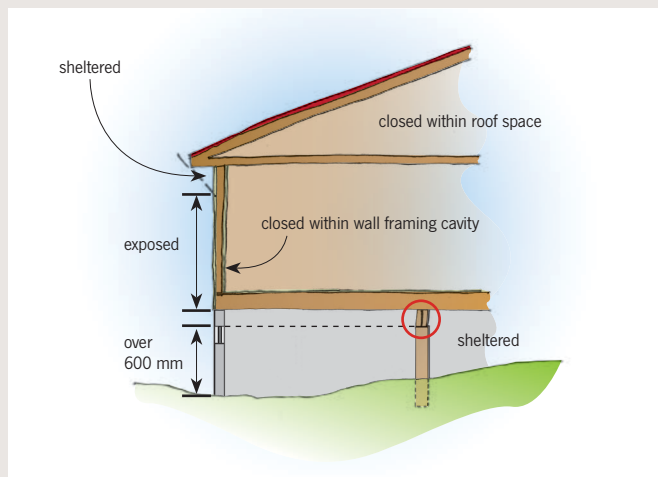


Figure 1: A concrete foundation in zones B or C restricts the subfloor ventilation so the location is sheltered.

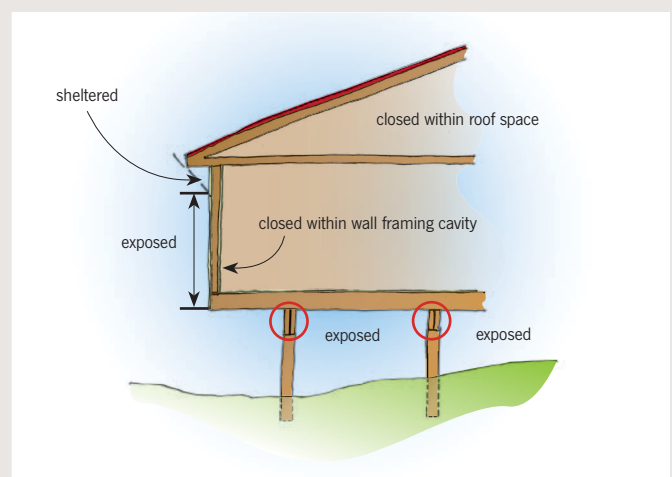


Figure 2: An open subfloor in zone B or C will require 304 stainless steel fixings because the ventilation rate exceeds $7,000 \text{ mm}^2/\text{m}^2$ and the fixing is connecting to a treated timber pile (H5).